

WHAT IS CLAIMED IS:

1. A method for chemical synthesis using a synthesizer, an analyzer, and a computer, the method including the steps of:

dispensing the reagents into a plurality of wells in a reaction block;

5 reacting in the synthesizer the reagents using various operating conditions;

obtaining a sample from the plurality of wells;

analyzing the sample using the analyzer to determine the components of the sample;

analyzing the components of the sample and the various operating conditions to generate a statistical analysis; and

10 generating suggested parameters for future experiments based on the statistical analysis.

2. The method as claimed in claim 1 wherein the step of reacting in the synthesizer the reagents using various operating conditions includes modifying the
15 temperature of the well.

3. The method as claimed in claim 2 wherein the step of reacting in the synthesizer the reagents using various operating conditions includes reacting the reagents by mixing the reactants in the well.

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4. The method as claimed in claim 1 further comprising the step of stopping the reaction in the wells prior to obtaining a sample from the plurality of wells.

5. Apparatus for chemical synthesis comprising;

a computer;

a synthesizer in communication with the computer, the synthesizer having a reaction block containing a plurality of wells, the synthesizer also having devices to control the atmospheric conditions of the reactions in the plurality of wells;

- 5 an analyzer in communication with the computer, the analyzer analyzing the components of the reactions;

the computer having a processor for sending commands to the synthesizer to control the atmospheric conditions, the processor also having a parameter look-up table containing the parameters for the reaction, the processor further receiving the analysis from the
10 analyzer of the components of the reactions and generating a statistical analysis based on the components of the reactions and the parameters of the reaction, the processor generating suggested parameters for future experiments based on the statistical analysis.